NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

HEAVY USE AREA PROTECTION

(Acre)

CODE 561

DEFINITION

The stabilization of areas frequently and intensively used by people, animals or vehicles by establishing vegetative cover, by surfacing with suitable materials, and/or by installing needed structures.

PURPOSES

This practice may be used as a part of a conservation management system to support one or more of the following purposes.

- Reduce soil erosion
- Improve water quantity and quality
- Improve air quality
- Improve aesthetics
- Improve livestock health

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to urban, agricultural, recreational or other frequently and intensively used areas requiring treatment to address one or more resource concerns.

Criteria

Criteria Applicable to All Purposes

General. All planned work shall comply with Federal, state, and local laws and regulations.

Safety of the users shall be incorporated into the design of the heavy use area protection.

Design Load. The design load will be based on the type of traffic, (vehicular, animal, or human) anticipated on the heavy use area. The minimum design load for areas that support vehicular traffic will be a wheel load of 4000 lbs.

Foundation. All site foundations shall be evaluated for soil moisture, permeability, texture, and bearing strength in combination with the design load and anticipated frequency of use.

A base course of gravel, crushed stone, other suitable material and/or geotextile shall be provided on all sites with a need for increased load bearing strength, drainage, separation of material and soil reinforcement. Natural Resources Conservation Service (NRCS), "National Engineering Handbook" (NEH), Parts 642 and 643 (formerly, NEH, Section 20) and AASHTO M-288 (latest edition) provide guidance in quality specification and geotextile selection.

An impervious barrier shall be provided on sites with a porous foundation (high permeability rate), where there is a need to protect ground water from contamination.

Foundation preparation shall consist of removal and disposal of soil and other

material that are not adequate to support the design loads.

Surface treatment. The surface treatment used shall be based on sound engineering principles and shall meet the following criteria for the surface treatment used:

A geotextile fabric shall be installed under the treatment area when needed to protect the integrity of the treatment materials. When a geotextile fabric is used it shall meet the minimum requirements for Class IV geotextile as shown in Table 1 "Requirements for Woven Geotextiles" or Table 2 "Requirements for Nonwoven Geotextiles" of NRCS Material Specification 592, "Geotextile" found in NEH Part 642.

The geotextile fabric shall be placed and anchored according to manufacture recommendation.

Bituminous Pavement The thickness and kind of base course, thickness of the pavement course, the kind and size of aggregate, the type of proportioning of bituminous materials, and the mixing and placing of these materials shall be in accordance with Louisiana Department of Transportation criteria for the expected loading.

Concrete The quality and thickness of concrete and the spacing and size of reinforcing steel shall be appropriate for the expected loading. The minimum compressive strength of the concrete shall be 3,000 psi at 28 days and shall be reinforced with steel as required by NEH Part 636, "Structural Engineering" and American Concrete Institute (ACI) – 318.

Other Cementitious Materials Soil cement, roller compacted concrete, and coal combustion by-products (flue gas desulfurization sludge and fly ash) may be used as surface material if designed and installed to withstand the anticipated loads and surface abrasion.

Aggregate A fine or coarse aggregate (sand, gravel, limestone etc.) surface shall be a minimum of 2-inches thick.

Other Treatment Surfacing materials, such as cinders, tanbark, bark mulch, brick chips, shredded rubber and/or sawdust, shall have a minimum layer thickness of 2 inches.

Sprays and Artificial Mulches. When utilizing sprays of asphalt, oil, plastic, manufactured mulches, and similar materials, the manufacturer's recommendations for application shall be incorporated into the design.

Vegetative Measures. Stabilization of areas with vegetative cover alone shall only be used on areas where traffic can be managed to maintain vegetative cover. Vegetative materials shall be grass species or other plant materials that are wear resistant and have fast recovery from heavy use and are suitable to the site. Liming, fertilizing, soil preparation, seeding, mulching, sodding and vegetation management shall be according to the planned use and appropriate NRCS Conservation Practice Standard in the local technical guide. If vegetation alone is not appropriate, other measures shall be used to accomplish the intended purpose.

Structures. All structures shall be designed according to appropriate NRCS Standards and Specifications and/or the Engineering Field Handbook recommendations.

Drainage and Erosion Control. Provision shall be made for surface and subsurface drainage, as needed, and for disposal of runoff without causing erosion

or water quality impairment. Provisions shall be made to exclude unpolluted run-on water from the treatment area. All treatment areas shall be shaped to prevent ponding of water.

Protection. Disturbed areas shall be established with vegetation or otherwise stabilized as soon as practical after construction. Seedbed preparation, seeding, fertilizing, and mulching shall conform to NRCS Conservation Practice Standard "Critical Area Planting" Code 342.

Additional Criteria Applicable to Areas Utilized by Livestock

General. NRCS Conservation Practice Standards "Critical Area Planting" Code 342, "Fencing" Code 382, "Prescribed Grazing" Code 528A, "Filter Strip" Code 393, or "Use Exclusion" Code 472 shall be used as companion practices, when needed, to meet the intended purpose of the heavy use area protection.

Provisions shall be made to collect, store, utilize and/or treat manure accumulations and contaminated runoff in accordance with NRCS Conservation Practice Standard "Waste Management System" Code 312 and "Waste Utilization" Code 633.

Treatment Area. The treated area shall include, and extend out, a minimum distance of 8 feet, in all direction, from facilities such as portable hay rings, water troughs, feeding troughs, mineral boxes, and other facilities where livestock concentrations and traffic cause resource concerns.

The treated area for gateways shall extend a minimum distance of 20 feet out from each side of the gate and for the entire width of the gate. The treated area should flair out as you extend away from the gate. If vehicles or equipment will also utilize the gateway, their weight must be considered in the design load.

The minimum treatment width for livestock lanes shall be 10 feet. A width of 15 feet is generally used for livestock/vehicle type lanes. For livestock/vehicle lanes the design load will include the weight of the vehicle that will utilize the lane. All lanes shall be fenced in accordance with NRCS Conservation Practice Standard "Fence" Code 382.

Gravel Treatment. Gravel used for surface treatment shall be crushed run stone, or graded stone as conditions warrant. The minimum depth of crush run stone or gravel shall be 6 inches uncompacted. All material shall be smoothed uniformly and compacted. The finished surface shall be sloped to prevent the ponding of water.

Concrete Treatment. If the subgrade is uniform and dense and equipment will not utilize the treatment area the minimum slab thickness shall be 4 inches, with a maximum joint spacing of 10 feet. A minimum 4-inch wide by 12-inch deep footing shall be provided around the perimeter of the slab. All concrete will be a minimum 3,000 psi with 6"x 6"x 6 gage reinforcement wire mesh placed at the mid-depth of the slab for the entire width and length of the slab and shall extend down into the perimeter footing. The concrete surface shall have a rough finish and sloped to prevent the ponding of water.

Additional Criteria for Areas Utilized for Recreation

General. The treated area shall be conducive to the overall recreation area and aesthetically blend with the general landscape and surroundings.

Plants, landscaping timbers, traffic control measures, wooden walkways, etc. shall be evaluated for effectiveness, aesthetics and accessibility as covered by the Americans with Disabilities Act.

CONSIDERATIONS

This practice may adversely affect cultural resources and must comply with NRCS General Manual 420, Part 401.

When stabilizing heavily used areas consider adjoining land uses and the proximity to residences, utilities, cultural resource areas, wetlands or other environmentally sensitive areas, and areas of special scenic value.

For heavy use areas conducive to protection by vegetation, consideration must be given to the effect(s) of treading and/or miring. The vegetative species selected should tolerate and persist under heavy use conditions. If practicable, consider increasing the size of the area and/or establishing a rest/non-use period to allow plant recovery and increase vigor.

Heavy use area protection effects on the water budget, especially on volumes and rates of runoff, infiltration, and transpiration due to the installation of less pervious surfaces should be considered in the selection of surfacing materials.

The transport of sediments, nutrients, bacteria, organic matter from animal manures, oils and chemicals associated with vehicular traffic, and soluble and sediment-attached substances carried by runoff should be considered in selection of companion conservation practices.

If the purpose of the heavy use area protection is improvement of water quality, the heavy use area should be (re) located as far away from the waterbody or watercourse as possible. Any work in and/or discharges near streams, wetlands or waterbodies may require a permit from the US Army Corps of Engineers, state water quality (permitting) authority, or local authority.

The size of heavy use areas utilized by livestock is dependent on the landowner's operation including type and number of animals, confinement periods, and/or the intended use. The size of treatment areas can range from 30 square feet per animal in partial-confinement to 400 square feet per animal in total confinement to 4000 or more square feet for animal exercise and holding areas. Heavy use protection areas should be kept as small as practicable.

When surface treatments such as bark mulch, wood-fiber or other non-durable materials are used for short-term livestock containment areas, consideration should be given to vegetation of the affected area with a cover crop.

For areas with aggregate surfaces that will be frequently scraped, consideration should be given to the use of concrete or cementitious materials to lessen the recurring cost of aggregate replacement.

Consideration should be given to the use of concrete around livestock watering troughs or tanks in lieu of gravel.

For urban and recreation areas, traffic control plants, landscaping timbers, wooden walkways, etc., should be evaluated for effectiveness and aesthetics.

PLANS AND SPECIFICATIONS

Plans and specifications for heavy use area protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans and

specifications shall include construction plans, drawings, job sheets or other similar documents. These documents shall specify the requirements for installing the practice, including the kind, amount and quality of materials to be used.

Development of plans will be guided by NRCS Engineering Field Handbook, Chapter 5, and shall be in accordance with NRCS National Engineering Manual, Parts 541 and 542.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan shall be prepared for and reviewed with the landowner or operator. The plan shall specify that the treated areas and associated practices are inspected annually and after significant storm events to identify repair and maintenance needs.

The O&M plan shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice.

For livestock operations, the O&M plan for heavy use areas may be included as a part
of the overall waste management plan. Periodic removal and management of manure accumulations will be addressed in the O&M plan.

REFERENCES

NRCS General Manual 420, Part 401
NRCS National Engineering Manual, Parts 541 and 542
NRCS National Engineering Field Handbook, Part 650, Chapter 5